



Space News Roundup

Vol. 33

March 25, 1994

No. 12

Endeavour takes center stage as launch nears

STS-59 crew is targeted for an early April mission

By James Hartsfield

Only half a day after *Columbia* was rolled to its hangar following two weeks in orbit, *Endeavour* was moved to the launch pad Saturday, on target for a launch perhaps as early as April 7 on shuttle mission STS-59.

Shuttle managers were scheduled to meet Thursday for a final review of preparations for STS-59, after which an official launch date was to be announced. Meanwhile, on the same day, the STS-59 crew—Commander Sid Gutierrez, Pilot Kevin Chilton and Mission Specialists Jay Apt, Rich Clifford, Linda Godwin and Tom Jones—completed a dress rehearsal countdown aboard *Endeavour* at KSC.

Also during the week, work at the launch pad centered on a flight readiness test of all electrical connections and valves in the main engines; preparations to fuel *Endeavour's* orbital propulsion systems; a power-up of the Space Radar Lab, STS-59's primary cargo; and a standard leak check of the main engine plumbing.

Elsewhere, *Columbia*, now in the Bay 2 processing hangar, was reported in good condition following the second longest shuttle flight to date. The cargo bay doors were opened in mid-week, and the experiments of the United States



Microgravity Payload-2 and the Office of Aeronautics and Space Technology-2 are to be removed from the bay today. Post-flight inspections of the windows, the auxiliary power units and the Ku-band antenna were begun in mid-week, and excess propellant is being drained from the spacecraft.

Discovery is in the Bay 3 hangar being readied for a launch in September and undergoing a periodic series of inspections performed on each orbiter after every five flights. Work this week included checks of the water spray boilers, the main engine plumbing, the engine

helium system, the external tank doors and the power reactant and distribution system. Preparations are also under way to remove the right-hand orbital maneuvering system pod from *Discovery* for servicing.

Atlantis is in the home stretch of a year-long period of upgrades and modifications performed at Rockwell's Palmdale, Calif., shuttle facility.

The work includes modifications that will allow *Atlantis* to fly missions up to two weeks in length and to dock with the Russian Mir space station.

The work on *Atlantis* remains on schedule with the spacecraft planned to return to KSC in late May or early June.

Restrictions may affect summer hires

Despite some uncertainty about budget restrictions, JSC plans to offer limited summer employment opportunities again this year.

The number of opportunities available will depend on available funding, according to Mary Allen, chief of Employee Services. "These programs benefit both the participants and the center," Allen said. "We plan to offer some employment opportunities, although the number may be smaller than in the past due to our strict budget."

The summer employment program typically consists of three sections, including the Summer Clerical Program, Summer Aids, and Programs for Persons with Disabilities.

"Currently, our plan is to have a relatively small clerical program this year," said Gayle Smith, staffing assistant for the program. A minimum typing skill of 40 words per minute is required for most positions.

Applications will be accepted through April 15 and should be submitted to AH76/Summer Clerical.

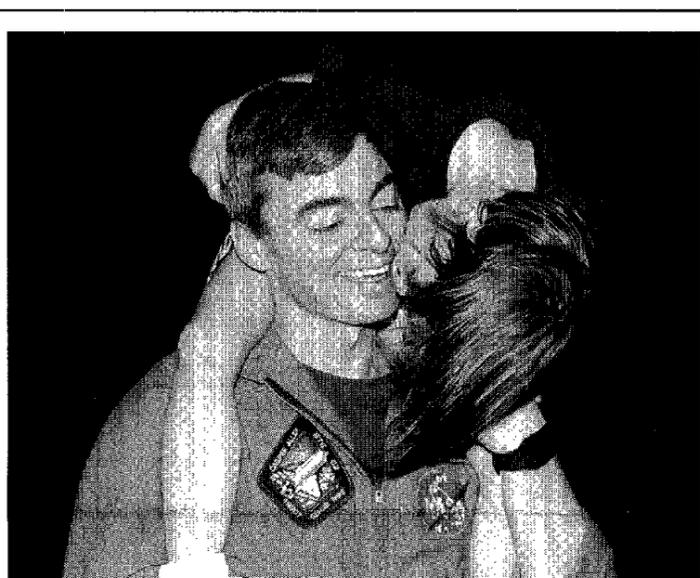
For additional information on the clerical program, contact Smith, x38404.

A very limited number of positions may be offered through the Programs for Persons with Disabilities, according to Charles Hoskins, program manager.

Employment opportunities in this program vary but all applicants must be certified as disabled through the Texas Rehabilitation Commission. There is no deadline for applications, but priority will be granted to those received by April 15.

Applications for this program should be sent to AJ/Program for Persons with Disabilities. For additional information, contact Smith, x38404.

Please see **LIMITED**, Page 4



JSC Photo by Jack Jacob

WELCOME HOME — STS-59 Pilot Andy Allen gets a kiss from his four year old daughter, Meredith during the welcome home ceremony at Ellington Field March 18. Allen, and his four crew mates — Commander John Casper, and Mission Specialists Pierre Thuot, Sam Gemar and Marsha Ivins — were greeted by a small crowd of well wishers as they returned to Houston following their 14-day mission.

AIAA plans informal symposium

The Houston Section of the American Institute of Aeronautics and Astronautics will host its 19th Annual Technical Symposium May 19 at the University of Houston-Clear Lake.

The symposium format will be unique in that formal publication of papers is not required and only the written abstract will be required prior to the symposium. In addition, presenters will not need to complete JSC Form 548, Approval and Funding for Technical Presentations, Technical Papers and Journal Articles for External Audiences, to participate in the symposium.

A major objective of the symposium is to give the JSC community and AIAA members an opportunity

to present their work to a professional audience without the extensive preparation or expense required by national meetings or other more formal settings.

Abstracts should be typed, double-spaced, and 100-250 words in length. Abstracts must include the author's name, address, mail code and phone number, and may be submitted on a floppy disk.

Abstracts should be submitted, along with a completed NASA Form FF427 by March 25, to Mr. Dudley Nelson, AIAA Vice Chairman-Technical, Lockheed Engineering and Sciences Company/B25, 2400 NASA Road 1, Houston, TX 77058.

For additional information, contact Nelson, 333-7054.

Station review reveals maturity of design level

By Kari Fluegel

Program managers from NASA, the international partners and the contractor community met this week at JSC to review and evaluate the design status of the international space station.

The System Design Review took place Wednesday and Thursday with program managers validating the overall technical requirements for the space station and taking a preliminary look at how those requirements are to be accomplished. At press time managers reported that the design review was proceeding well.

"This is where we move from concepts to hardware implementation," said Randy Brinkley, Space Station program manager. "This is by far the most important technical milestone in the program since last year's redesign of the station. The SDR locks in the key technical elements of the system as well as the schedule and cost."

The review activities involved managers from NASA; the Canadian Space Agency; the European Space Agency; the Italian Space Agency; the Japanese Space Agency; the Russian Space Agency; the prime contractor Boeing; and Tier I subcontractors Rocketdyne and McDonnell Douglas.

The SDR establishes the technical baseline of the entire program and is an extension of the SDR process conducted in December. The SDR documentation has been reviewed concurrently by program analysis and integration teams and integrated teams. NASA, the international part-

ners, Boeing and the Tier I subcontractors all have participants on the teams developing the SDR documents.

The two-day meeting was intended as an executive summary and overview of the SDR process results. Participants reviewed the operation and utilization concept, the baseline assembly sequence and assembly operations. For the international space station, this includes the specifications for the U.S. on-orbit components, U.S. ground components, ESA's Columbus Laboratory Module and the Japanese Experiment Module.

Participants also looked at the basic design of the station's core systems including electrical power; thermal control; life support; guidance, navigation and control; propulsion; command and data handling; communications and tracking; and extravehicular activities. Risk and affordability also were assessed. The analysis at SDR demonstrated the feasibility of the requirements and established the physical and functional interfaces between system elements including software and hardware.

The overall objective of the meeting was to develop consensus among program managers on the technical validity, design and completeness for the space station system specifications; the operations concept; requirements for interfaces with the space shuttle and Russian launch vehicles; and to refine cost and program schedules.

This was an important checkpoint. Please see **STATION**, Page 4



Kathryn Thornton

Two named to STS-73 crew

Kathy Thornton has been named Payload Commander of the second United States Microgravity Laboratory mission currently slated for launch in the fall of 1995 aboard *Columbia*.

Also named to the flight was Air Force Capt. Catherine "Cady" Coleman. Coleman was selected as an astronaut in 1992 and will be making her first shuttle flight.

STS-73 will mark Thornton's fourth shuttle flight. She first flew aboard *Discovery* on STS-33 in November 1989.

Her second flight, in May 1992 was STS-49, the mission that repaired and returned the Intelsat spacecraft to useful service. During

one of four spacewalks on that flight, Thornton examined assembly techniques for large space structures such as the international space station. Most recently, Thornton was a crew member on board *Endeavour* during STS-61, the Hubble Space Telescope servicing mission in December 1993.

Since Coleman's selection as an astronaut, she has supported the Astronaut Office Mission Support Branch, assisting with flight software verification in the Shuttle Avionics Integration Laboratory.

STS-73 currently is scheduled to last 16 days, which would make it the longest mission in the shuttle program's history. The mission is

designed to continue laying the foundation for microgravity research conducted over extended durations in space.

USML-2 follows the first microgravity laboratory mission, STS-50, flown in June and July 1992. The mission will continue the series of shuttle flights dedicated to studying microgravity materials processing technology through research sponsored by government, industry and academia.

The mission will focus on materials science, biotechnology, combustion science, the physics of fluids and many other scientific experiments to be housed in the pressurized Spacelab module.



Catherine Coleman

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

NASA Night at Astroworld: Visit Astroworld from 6 p.m.-midnight, April 8. Cost is \$11.95 for first 5,000 tickets sold, then price increases to \$12.95.
Astroworld Early Bird: Tickets available for one-day admission for 1994 season. Cost is \$16.75 per person. Tickets must be purchased by May 31.
Seaworld of Texas: Discount tickets: adult \$20.95; child (3-11), \$14.25.
Fiesta Texas: Discount tickets: adult \$18.95; child (4-11) and seniors (55+), \$14.25.
Moody Gardens: Discount tickets for two of three different attractions: \$9.
Entertainment '94 Coupon Books: Bay Area/Galveston/Downtown or FM 1960/Downtown: \$30 each, \$1 off first book for civil servants. Gold C Books: \$8.
Space Center Houston: Discount tickets: adult, \$7.50; child (3-11), \$4.50; commemorative, \$9.95.
Metro tickets: Passes, books and single tickets available.
Movie discounts: General Cinema, \$4.75; AMC Theater, \$4; Loew's Theater, \$4.50.
Stamps: Book of 20, \$5.80.

JSC

Gilruth Center News

Sign up policy — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

EAA badges — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday-Friday; 9-11 a.m., 1-3 p.m. and 6:30-9 p.m. Wednesdays; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

Intercenter Run — The Spring Intercenter Run begins April 1 and continues to April 30. Run or walk a two-mile or 10K course and submit times to the center.

Basketball league — Registration for Spring basketball league is April 14.

Volleyball league — Volleyball Mixed C Spring League registration is April 12 and Mixed B registration is April 13.

Ballroom dancing — Classes meet from 7-9:30 p.m. Thursday nights. Cost is \$60 per couple for eight weeks. Beginner, beginner-intermediate, intermediate and advanced instruction is provided.

Weight safety — Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. April 6. Pre-registration is required. Cost is \$5.

Defensive driving — Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is April 9. Cost is \$19.

Scuba class — New class begins April 7. For additional information, contact Bernie Ehlers, 333-5364.

Creative writing — Five-week basic creative writing class meets from 6:30-9 p.m. beginning March 31. For additional information, contact Barbara Reeves, 473-0748.

Aerobics — High/low-impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

Exercise — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Aikido — Martial arts class meets from 5-7:30 p.m. Tuesdays and 6:15-8:15 p.m. Wednesdays. Black Belt class from 6-8 p.m. Fridays, requires instructor permission. Cost is \$25 per month.

Softball tournament — Men's Open C pre-season softball tournament will be held March 26-27. Registration deadline is 7 p.m. March 24. Cost is \$100.

Stamp club — JSC Stamp Club will meet from 7-9 p.m. every other Monday. For more information, call Dianne Kerkhove at 554-2764.

Fitness program — Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

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Dates & Data

Today

Cafeteria menu — Special: fried chicken. Total Health: vegetable lasagna. Entrees: broiled cod fish, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

Monday

Cafeteria menu — Special: meat sauce and spaghetti. Total Health: potato baked chicken breast. Entrees: wieners and sauerkraut, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of asparagus. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

Tuesday

PMA meets — The Houston chapter of the Performance Management Association will meet from 5:30-7:30 p.m. March 29 at the Gilruth Center. Dr. Thomas Johns, president of Business Management Consultants will present a case study in implementing earned value. Cost to attend is \$10. For additional information, contact Ed Parks, at 244-5375.

Cafeteria menu — Special: smothered steak with dressing. Total Health: shrimp creole over rice. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken, French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas, potatoes au gratin.

Wednesday

Infertility seminar — The JSC Clinic will present an infertility seminar from 7-9 p.m. March 30 at the Gilruth Center, Rm. 216. Dr. Vicki

Schnell will discuss causes and treatments for infertility. For reservations and additional information, contact Joyce Mason or Lynn Hogan, x37783.

AFCEA meets — The Houston Chapter of the Armed Forces Communications and Electronics Association will meet from 11:30 a.m.-1 p.m. March 30 at the Lakewood Yacht Club. Kenneth Cox, chief of the Navigation, Control and Aeronautics Division will discuss "Improved Ways of Doing Business between Industry and Government." For additional information, contact Linda Hinton, 282-7682.

Astronomy seminar — The JSC Astronomy Seminar will meet at noon March 30 in Bldg. 31, Rm. 129. For more information, call Al Jackson, 333-7679.

Cafeteria menu — Special: salmon croquette. Total Health: vegetable plate. Entrees: roast pork, baked perch, steamed fish, vegetable lasagna, Reuben sandwich. Soup: seafood gumbo. Vegetables: mustard greens, okra and tomatoes, vegetable sticks, lima beans.

Thursday

AIAA meets — The Houston Section of the American Institute of Aeronautics and Astronautics will host a dinner meeting beginning at 5:30 p.m. March 31 at the Gilruth Center. Reservation deadline is noon, March 28. For reservations and additional information, contact Frankie Hap, 333-6064; Ardell Broussard, 283-1040; Sarah Leggio, 282-3160; or Mary Ann Bivona, 483-1350.

Russian speakers — Practice Russian language skills from 11 a.m.-

1 p.m. March 31 in the Bldg. 3 cafeteria. For more information, call Jack Bacon, x38725, or Amy Mendez, x38066.

Cafeteria menu — Special: stuffed cabbage rolls. Total Health: oven crisp cod. Entrees: beef tacos, ham and lima beans, pork and beef egg rolls, steamed fish, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, green beans, buttered squash, pinto beans.

Friday

Cafeteria menu — Special: baked chicken. Total Health: roast beef au jus. Entrees: deviled crab, Creole baked cod, baked chicken, beef cannelloni, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

April 6

Astronomy seminar — The JSC Astronomy Seminar will meet at noon April 6 in Bldg. 31, Rm. 129. For more information, call Al Jackson, 333-7679.

April 7

Russian speakers — Practice Russian language skills from 11 a.m.-1 p.m. April 7 in the Bldg. 3 cafeteria. For more information, call Jack Bacon, x38725, or Amy Mendez, x38066.

April 13

Astronomy seminar — The JSC Astronomy Seminar will meet at noon April 13 in Bldg. 31, Rm. 129. The video tape "Galileo, Earth and Moon Encounters" will be shown. For more information, call Al Jackson, 333-7679.

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Rent: Galveston beach house, dly/wkly, CA/CH, furn. Ed Shumiliak, x37686 or 326-4795.

Sale: Galveston beach house, 3-2, CA/CH, furn. Ed, x37686 or 326-4795.

Rent: Galveston condo, furn, sleeps 6, Seawall Blvd and 61st St, dly/wknd/wkly, Magdi Yassa, 333-4760 or 486-0788.

Rent: Galveston beach house, wkly/wknd, sleeps 10. James, x36666 or 487-5730.

Rent: Arkansas cottage, Blue Mt Lake, furn, 4 ac, \$250/wkly/\$50/dly. x33005 or 334-7531.

Rent: Condo, Winter Park, CO, furn, 2-2, sleeps 6. 488-4453.

Sale: Condo, Ft. Lauderdale, FL, time share, \$12k. x36851 or 332-8017.

Sale: TaylorCrest, 4-3-2.5D, 3200 sq ft, pool/spa, art studio, cul-de-sac, 4% to buyer's agent, \$282.5k. Richard, x30271 or 326-4963.

Sale: Nassau Bay, house, 4-2-2, \$113,950. 333-3876.

Lease: Piper's Meadow, 3-2-2, FPL, avail 4/15, \$845/mo + dep. x40124 or 480-9436.

Sale: Piper's Meadow, 3-2-2, open house, 1-6 pm Sun, \$82.9k. 486-1469.

Sale: Sagemont, 3-2-2, both formals, approx 1800 sq ft, \$72k. Ben, x34339 or 481-1439.

Lease/Sale: Clear Lake Shores, 3 BR, \$89.7k. 538-1849.

Rent: Nassau Bay, 4-2-2.5, 2000 sq ft, 2-story, deck, lg garage. \$1190/mo. Jerry, x38922 or 488-5307.

Sale: League City, 3-2-2, ceiling fans, ceramic tiling, landscaped, \$63.9k assum. John, x33662 or 337-5622.

Lease: Forest Bend townhome, 2-1.5, 2-story, ceiling fans, patio, \$450/mo. B. Craig, 420-2936.

Lease: LC, 2-2-5-1, W/D/refrig/FPL, \$725/mo. 332-8017.

Lease: Condo, April Sound, 5/27-6/2, sleeps 6, \$450. John, 235-2342.

Rent: CL, 2 rooms in 3-2, \$400/mo + 2/3 util. 286-7516.

Lease: Webster, lg condo, 2-1, FPL, appli, upstairs, W/D conn, \$495/mo. x31275 or 486-0315.

Sale: Galveston Sea Isle, 3-2, \$67k. 332-6752.

Sale: 1.9 ac, Point Blank, TX. x37310 or 326-2307.

Sale: Lake Livingston, 2 lots, owner finance, \$5k. James, x36666 or 487-5730.

Cars & Trucks

'78 Porsche 928, brown, auto, ex cond,

75k mi, \$8.5k. Bill, 244-8889.

'86 Nissan 300 ZX turbo, auto, black, T-tops, AM/FM/cass, A/C, ex cond. Richie, 996-7716.

'91 Camaro, blue, A/C, stereo, auto, ex cond, \$7.6k. 282-4742 or 486-5312.

'91 Toyota Tercel, 4 dr, A/C, blue, 25k mi, \$6.5k. 486-6861.

'85 Ford F150, 351 V8, LWB, white/blue, 102k mi, \$2.5k. 283-1080 or 334-3097.

'87 Toyota Tercel, 4 dr wagon, 76k mi. \$2950 OBO. Dan or Sharon, 286-9132.

'74 Triumph Spitfire, w/removable hard top, \$1.9k. Craig, x36206 or 280-0176.

'82 Ford EXP, 2 dr, hatchback, PS/PB, auto, \$900 OBO. 282-3224.

'86 Pontiac Fiero, ex cond, sunroof, AM/FM/cass, red, \$3.5k. Nicole, 333-6802 or 992-1162.

'82 Camaro, A/C, auto, 2.8L V6, AM/FM/cass, brown/beige, ex cond, \$2.5k OBO. 991-5280.

'94 Z28 Camaro, burgandy/grey, all pwr, auto, T-tops, \$19.9k OBO. Chris, x38543 or 996-0712.

'87 Toyota Supra, white/red, 5 spd, CD/AM/FM, ex cond, 4.9k mi, \$8.5k OBO. Chris, x38543 or 996-0712.

'82 Chevy PU, 3/4 ton, 71k mi, 4 spd, \$2.2k. 339-1176.

'86 F150, Super Cab XL, long bed, liner, rails, 351 V8, auto, A/C, \$4.5k. 339-1176.

'79 Mercedes 450 AL, alarm, cream, \$15k. x42187 or 353-1779.

'85 Porsche 944, red, PW, sunroof, A/C, AM/FM/cass, 45k mi, \$7.6k. Jim, 488-7483.

'86 Nova, 4 dr, AM/FM/cass, 167k mi, \$1k. Dave, x45381.

'84 Toyota Supra, 91k mi, \$3.4k OBO. Mike, x30993 or 333-1856

'87 Toyota Supra, 91k mi, \$3.4k OBO. Mike, x30993 or 333-1856

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spkrs, \$75. x36851 or 332-8017.

US Robotics Courier HST dual std cellular fax modem, V.32 Terbo at 19,200 BPS, V.17 group III Fax support at 14,400 BPS, new \$1295/sell \$550. Tony, x47401 or 482-4156.

MAC Ilsi 5/160, \$1.2k OBO. Alex, 641-1309.

IBM compatible, NEC-286 computer, 640k RAM, 44MB HD, 2 FD, color monitor, kybd, software, \$500. Earl Rubenstein, 480-1998.

Citizen GSX-140 Plus, 24 dot matrix printer, color compatible, ex cond, was \$300 now \$150. Jay, 481-2335.

Panasonic KX-P1091 computer printer, \$50. Robert, x38868 or 488-4069.

2400 bps internal modem, \$25; U.S. phonebook on CD, \$80; 3860 x 25 mother board, \$100; Juki 6100 daisy wheel printer, \$50; mono card & monitor, \$40; 512k SVGA, 16 bit, \$40; Borland CTT 4.0, \$150; Wordstar 7.0 for DVS, \$50. 538-2123.

Sanyo Beta VCR, any offers. Judy, x37906 or 286-9455.

Lotus 1-2-3 rel. 4.0.1 for Windows & Lotus Write rel.2.0, \$150/both. 486-5500.

Canon bubble jet printer BJ-5, portable, ex cond, \$100. Paul, x48601 or 474-3255.

Twinhead notebook 486 SLC/33, 85MB, 4MB RAM, ext, floppy, fax/modem, PC MCIA slot, \$950. Ben, x37455 or 992-9023.

Harmon-Kardin stereo rcvr, \$35; Pioneer HPM-100 spkrs, \$100/pr; DB spkrs, \$100/pr. Steve, x37152 or 992-7049.

Brass & glass vanity, \$30; dining room set, table, 6 chairs, hutch, \$1.8k. Tony, x35966.

GE 5 cycle washer w/mini-wash & 6 cycle dryer, hvy duty, ex cond, \$300/pr OBO. 482-6879.

Couch & matching loveseat, earthtones, \$100; end table & lamp, \$30. x35376 or 943-3842.

19 cu ft, used refrigerator, gold, ice maker, \$185. Lynn, x35974 or 992-1052.

Car repair manuals, '73 Ford, '79 Toyota, '79 Chevy, \$15/all; Chevy trailer hitch, \$7; two hundred pre '65 Roosevelt dimes, \$70. Ted, x34116.

'73 pop-up camping trailer, stove, refrig, sleeps 6, \$900; clothes; sports equip; bikes; qn sz waterbed. 486-6861.

Infant girls clothes, dress & gowns, sz sm-XLg; girls dress, pink, sz 12, ex cond, \$3-\$25. 488-6521.

Sears 3 & 10 in socket extension, fits 3/8 in drive, \$10/both. David, x34395.

Mori Lee wedding gown, veil, petticoat, sz 8. 332-6752.

Hartco wood parquet floor tile, 3 boxes, 25 sq ft per box, \$55/per box. 333-6277 or 339-3562.

'88 Trail Seeker travel trailer, 26', ex cond, loaded, \$11k. 554-6677.

Tickets, five Pink Floyd, Rice Stadium, April 5. x35121 or 488-7909.

Concert tickets Pink Floyd, choice seats/pr, best offer. 326-5150.

Up to 4 American Airlines group tickets, roundtrip, "Open Jaw" Dallas to London 5-29-94, Paris to Dallas, 6-11-94, \$675 per ticket. 486-5500.

Concert tickets Pink Floyd, choice seats/pr, best offer. 326-5150.

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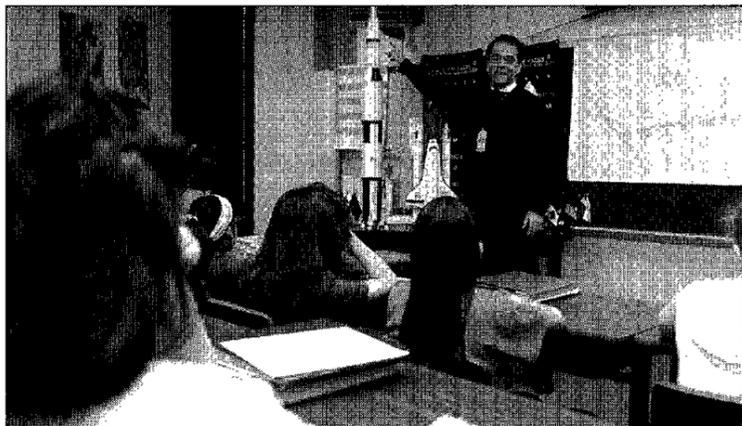
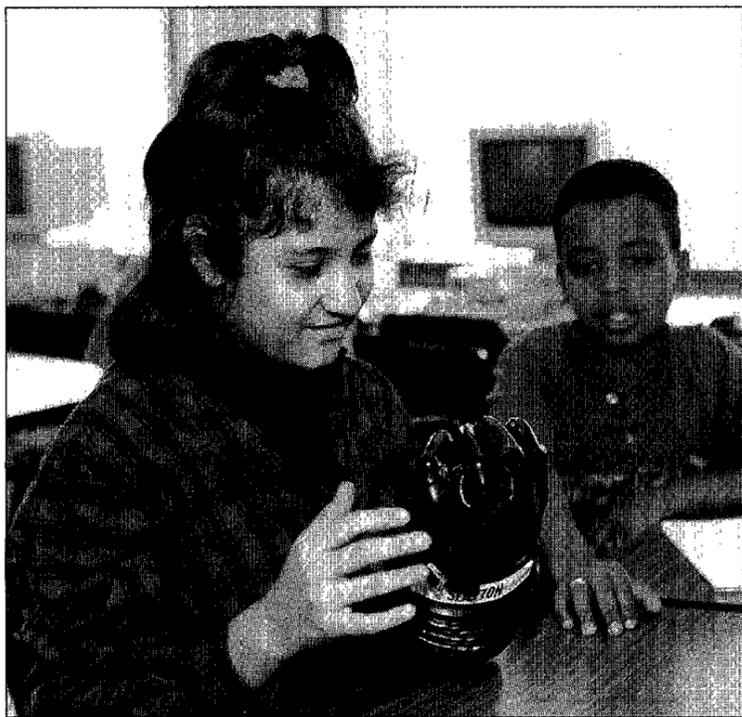
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Encouraging engineers

Students of all ages benefit from experiences, demonstrations of visiting JSC professionals

The wide-eyed interest of a second-grader in the process of designing a space station may someday be translated into a budding engineer putting together the pieces of the first Mars colony.

And that interest may have been instigated by one of the many JSC engineers who went back to school last month to share their love of the profession with students of all ages throughout the Bay Area.

A total of 155 engineers visited the classrooms of 259 teachers at 58 schools and talked with 13,055 students during National Engineers Week. Officially, the week ran Feb. 20-26, but the JSC program extended beyond the formal observance to a three-week program to encourage students to pursue careers in engineering.

The visual evidence of the program's success includes, clockwise from top left:

1) JSC engineer Jessica Kite works with Joe Edwards, Lacy Lambert, Vickie Gohl and Wes Wisnoski at Susan Chapman's 4th Grade class at Friendswood's Westwood Elementary School as they use construction-

paper modules to design their own space station.

2) Katherine Dinges of Mary Frazier's chemistry class at Friendswood High School gets to try on a space suit glove.

3) JSC engineer Michael Ruiz poses with the students from Claudette Bolduc's 5th Grade bilingual class at Pasadena's South Houston Elementary School.

4) Ruiz explains the use of a zero-gravity food tray to 5th graders Diana Bernal, Noe Ferretiz, Eliazar Vallejo and Francisco Garza.

5) Dionne Comacho, Melina Rios, Christina Bandor and Ha Nguyen, all of Paula Sklenarik's math class at South Houston Intermediate School in Pasadena, listen as JSC engineer Jack Bacon explains the Saturn V rocket and the space shuttle.

6) Jessica Reyes and Eliazar Vallejo of Bolduc's class check out a glove bearing Astronaut Deke Slayton's name.

Established in 1951 by the National Society of Professional Engineers, National Engineers Week now involves more than 17 professional organizations in its educational outreach.



ENGINEERS
Turning Ideas
Into Reality.

NATIONAL ENGINEERS WEEK
FEBRUARY 20-26, 1994

Fossil research may foster new discoveries on Mars

A scientist at NASA's Ames Research Center has developed a strategy to search for microfossils on Mars that may guide future site selections for possible exploration missions.

"Our focus in the search for life on Mars has shifted to the search for ancient life because of the formidable conditions on the Martian surface," said Jack Farmer, a paleontologist and geologist at Ames. Farmer calls his newly invented discipline exopaleontology.

In association with colleagues at Arizona State University Farmer has catalogued and prioritized the sites on the planet most likely to conceal well-preserved microbial fossils. The strategy is based on the principles of Precambrian paleontology, the study of the Earth's

earliest fossil record.

The Precambrian era includes more than 90 percent of Earth's history. Beginning before the time of the oldest Earth rocks dated 3.9 billion years ago, it continues to the explosion of complex multicellular life about 540 million years ago.

Many scientists think ancient Mars was a much warmer, more volcanically active planet with a dense atmosphere and abundant water. The Martian surface can lay claim to the largest volcano in the solar system, Olympus Mons. River channels and lake basins carved into Mars' now-dusty terrain show vast amounts of water were once present on the planet's surface.

The channels and lake basins are concentrated in the oldest, most heavily cratered terrains of Mars.

These areas are believed to be the same age as the earliest microbial fossils on Earth — about 3.5 billion years old, Farmer said.

Since microbial communities developed on Earth in less than a billion years, it is plausible that organisms also developed on an early warm and wet Mars, he said. If life developed on Mars, it is likely to have left a fossil record. According to Farmer, the best locations to hunt for Martian fossils are where nutrient-rich water once bubbled to the surface as hot springs.

Farmer has studied hot spring deposits in Yellowstone National Park to learn how to recognize them on Mars.

"Where organisms coexisted with early mineralization, we have the potential for preserving soft-bodied

microbes, sometimes for billions of years," he said. "The hot water bubbling off carbon dioxide gases creates alkaline conditions. This encourages minerals like silica and carbonate to separate out. The precipitating minerals encase and bury organisms and even entire microbial mats."

Silicous thermal springs are the best places to look because silica is relatively stable and has a long residence time in Earth's crust, Farmer said.

Carbonates are more soluble than silica, he said, but can still preserve soft-bodied microorganisms for billions of years. Microbes also coexist with precipitating minerals in evaporating lakes like Mono Lake in California, another site Farmer is studying.

Spring deposits on lake bottoms often form at lower temperatures that do not deteriorate the organic material as much as a high temperature spring. Microbes trapped in these deposits can be preserved for hundreds of millions of years, he said.

Lakes can also evaporate, leaving salt that entraps cell walls and extracellular material of microbes. However, salt tends to dissolve easily and if a surface water cycle is active, its crustal residence time is short, Farmer said.

Farmer presented his research at the Geological Society Meeting of America in San Bernardino, Calif. Farmer and his colleagues recently compiled a catalog that includes Mars exobiology sites. NASA will publish the catalog later this year.

Limited summer hiring planned due to budget

(Continued from Page 1)

tional information, contact Hoskins, x30607.

The Summer Aids program is geared toward high school students from economically disadvantaged families. Participation in this program is limited to disadvantaged students enrolled in their high school's vocational education program with an interest in performing clerical work.

Selections for Summer Aid program are made in coordination with high school placement and counseling offices.

For additional information on the Summer Aids program, contact Susan Anderson, x33076.

Allen reminds employees that the summer employment programs are open only to the U.S. citizens. Applications for all programs should be made on Standard Form 171. Forms are available in Bldg. 45, in the cabinet located outside Rm. 140.

In addition to these three programs, JSC plans to host a number of participants under programs funded by NASA Headquarters through the Equal Opportunity Programs Office and University Programs.

Participants in this program are scholarship recipients from Florida A&M, Spelman College, and Morehouse College. Programs sponsored by University Programs include the ASEE Summer Faculty program, the Graduate Student Researchers Program, and several student and faculty programs administered by the Universities Research Association.

For additional information on these programs, contact Joseph Atkinson, Jr., director of Equal Opportunity Programs, x34831 or Stanley Goldstein, director of University Programs, x34724.

College fund to offer scholarships

An article concerning scholarship fund application deadlines for the NASA College Scholarship Fund and the NASA Exchange-JSC scholarships was incorrect in the number of scholarships to be awarded.

The NASA College Scholarship Fund will be offering 29 scholarships this year, not four as reported in the March 18 edition of the Space News Roundup.

Of the 29 scholarships, 25 were made possible by a donation of \$250,000 by the Freedom Forum on behalf of the STS-61 crew, and one will be presented in honor of former NASA Administrator, James Webb.

The STS-61 crew was named recipient of the Forum's Free Spirit Award for its efforts in servicing the Hubble Space Telescope during its December mission.

The seven crew members, Commander Dick Covey, Pilot Ken Bowersox, Payload Commander Story Musgrave and Mission Specialists Tom Akers, Kathy Thornton and Jeff Hoffman, will accept the award at a dinner Monday night.



Susan Cupples explains the workings of a liquid-cooled garment to a group of girls who participated in last year's Take Our Daughters To Work Day activities. JSC is again participating in the annual event which takes place April 28.

Sponsors can help inspire girls' career choices

By Eileen Hawley

JSC employees have an opportunity to broaden the horizons of 50 young girls as the center participates in national Take Our Daughters To Work Day April 28.

"The goal of this event is to offer these girls a world of opportunities in selecting a career," said Pam Adams, Federal Womens Program manager. "The women and men working at JSC can offer a great deal of encouragement to their own daughters, or to other young girls by participating in this activity."

JSC Director, Dr. Carolyn Huntoon supports the Take Our Daughters To Work Day activities. "We need to do more than encourage girls to pursue an education in their fields-of-interest. We need to show them the exciting and challenging job opportunities that exist for them in engineering, medicine, scientific research, law, accounting, human resources, public affairs, education and the arts," Huntoon said. "Our daughters will be enriched with this experience, and efforts like this will lead to a more diverse professional workforce at JSC and in academia and industry in the future."

The day-long program begins at 8:30 a.m. in Teague Auditorium with a discussion by five JSC employees on their own careers. Presenters include Jeanne Crews and Vickie Kloeris, Space and Life Sciences; Susan Cupples and Joyce Carpenter, Engineering; and Kathy Thornton, Flight Crew Operations.

The girls will then take a hands-on look at the laboratories and offices where these

employees work. Following a group lunch, the girls will join sponsors in their work area to share in normal business activities.

"We want these girls to challenge their previous ideas about their own limitations and think about possibilities," Adams said. Take Our Daughters To Work Day provides girls ages 9 to 15 the opportunity to picture themselves in a variety of careers as they spend the day with engineers, scientists, journalists, technicians, and other JSC employees.

Civil service employees will be selected on a first-come, first-served basis to participate in this event. Only one daughter may accompany the sponsor to work and girls who participated in last year's event are not eligible.

Having a daughter is not a prerequisite for participation. JSC employees with a background in math, science or engineering and who are interested in sponsoring a girl during Take Our Daughters to Work Day, also are encouraged to apply for the program.

Interested employees should complete an application form and return it to the Federal Womens Program/AJ by April 1. Application forms were included as part of the announcement on Take Our Daughters To Work Day distributed throughout the center on Wednesday. The announcement may also be accessed through the OfficeVision (PROFS) network.

For additional information on Take Our Daughters To Work activities, contact Adams, x33761.

STS-59 mission briefings planned

The STS-59 crew will conduct its pre-flight press conference beginning at 8 a.m. Tuesday.

The briefings begin with a mission overview by Lead Flight Director Al Pennington. A mission overview detailing the Space Radar Laboratory payload begins at 9 a.m. and is followed by SRL component briefings at 10 a.m. and 11 a.m.

The six-member crew—Commander Sid Gutierrez, Pilot Kevin Chilton, Payload Commander Linda Godwin, and Mission Specialists Jay Apt, Mike Clifford and Tom Jones—will participate in a one-hour news conference beginning at 1 p.m.

Science briefings resume with a Space Tissue Loss experiment overview at 3 p.m. and conclude with a Getaway Special payload briefing from Goddard Space Flight Center at 3:30 p.m.

The briefings will be carried live on NASA Select television.

During the planned nine-day mission, the Space Radar Laboratory in *Endeavour's* cargo bay will be used to conduct a global study of how the Earth's environment is changing, distinguishing human-induced changes from natural forms of change. STS-59 also features the first flight of a cooperative initiative with the National Institutes of Health.

Endeavour's crew members will talk with students in the United States, Finland and Australia using the Shuttle Amateur Radio Experiment.

Currently, the launch of STS-59 is targeted for 7:07 a.m. CST April 7.

Station review assesses design

(Continued from Page 1)

for the program, Brinkley said. "This review gave us an opportunity to assess the developing design to ensure that it meets program objectives and requirements."

Over the next year, the space station team will refine the design to more detailed levels and finalize it at the Critical Design Review currently scheduled for April 1995.

"Since last year's redesign of the space station, NASA has made significant progress with the international partners and contractor team to provide—on schedule and within budget—a world-class, space-based research facility," Brinkley said.

"By using about 75 percent of the hardware planned for Space Station *Freedom*, NASA has been able to maintain its investment to date while redesigning the system to be less expensive and more capable," he said.

"The international community of researchers, scientists and industry that comprises the International Space Station users will have access to an unprecedented amount of power, volume and crew time to conduct investigations in the microgravity environment of space," Brinkley concluded.



Brinkley

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

STS-62 crew to share mission memories

The STS-62 crew will present its post-flight briefing to JSC employees beginning at 10:45 a.m. Thursday in Teague Auditorium.

The crew members—Commander John Casper, Pilot Andy Allen, and Mission Specialists Pierre Thuot, Sam Gemar and Marsha Ivins—will show a film and discuss the work they conducted during the 13-day United States Microgravity Payload

mission.

Immediately prior to the presentation the crew members will receive their Space Flight Medal Awards.

When STS-62 ended at 7:09 a.m. March 18, *Columbia's* crew was left 57 minutes short of establishing an endurance record for a shuttle flight. That record of 14 days, 13 minutes was set by STS-58 in October.

The crew also is scheduled to

appear at 11 a.m. April 7 at Space Center Houston.

JSC employees may attend the briefing at Space Center Houston free of charge by showing their NASA badge at the main entrance.

Employees who drive their car to Space Center Houston, also should show their badge at the parking turnstile to be admitted without paying the parking fee.